II. REMARKS

Claims 1-20 are pending after entry of this amendment. Claims 1-13 and 15-19 are amended. Claim 20 is new. No new matter is added.

Applicants respectfully request that the Examiner consider all pending claims and pass this application to issue. Applicants invite the Examiner to telephone the undersigned attorney at 408-453-9200 if there are any questions.

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Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

I. IN THE CLAIMS

1. (Amended) A method [performed in an atomic layer deposition (ALD) process conducted in a process chamber, the method] comprising the acts of:

supplying an atomic layer deposition process [a] gas to a [the] process chamber, wherein a gas flow conductance is defined for gas exiting the chamber; and

varying a flux of the deposition process gas to a substrate in the [an ALD] process chamber by varying the [chamber] conductance;

wherein varying the conductance comprises varying a restriction through which gas exits the chamber.

2. (Amended) The method of Claim 1 further comprising the act of maintaining a substantially constant flow rate of the gas into the chamber while varying the conductance [wherein varying the chamber conductance comprises varying an area of an opening between a process region and a lower pressure volume outside the process region].

3. (Amended) The method of Claim 1 wherein varying the [chamber] conductance varies a [the] flux of ions to the substrate [in the ALD process].

4. (Amended) The method of Claim 1 wherein varying the [chamber] conductance varies a [the] flux of reactive atoms to the substrate [in an ALD process].

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5. (Amended) The method of Claim 1 wherein the flux of the gas on the substrate varies inversely with the [chamber] conductance[, such that the flux of the gas on the substrate increases when the conductance decreases].

6. (Amended) The method of Claim 1 wherein a [the] pressure in the process chamber [region] varies inversely with the chamber conductance.

7. (Amended) The method of Claim 1 wherein varying the [chamber] conductance comprises [periodically varying] alternating the conductance between a first conductance and a second conductance, the second conductance being higher than the first conductance.

8. (Amended) The method of Claim 7 wherein the alternating between the first and second conductances is periodic [said periodically varying the conductance varies the conductance between relatively low and relatively high conductances].

9. (Amended) The method of Claim 7 [8] further comprising the act of generating ions during first [low] conductance periods.

10. (Amended) The method of Claim 7 [8] further comprising the act of generating reactive atoms during first [low] conductance periods.

11. (Amended) The method of Claim 7 [8] further comprising the act of generating a plasma during first [low] conductance periods.

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12. (Amended) The method of Claim 11 wherein [further comprising] generating the plasma comprises applying RF power within the process chamber during first [low] conductance periods [to generate the plasma].

13. (Amended) The method of Claim 11 [12] wherein generating the plasma comprises applying [RF power to generate a plasma comprises applying a] constant RF power within the process chamber, and further comprising the acts of:

[while] igniting the plasma by increasing chamber pressure[,] by lowering the [chamber] conductance [, to ignite the plasma, the method further comprising:] ; and

extinguishing the plasma by decreasing chamber pressure[,] by increasing the [chamber] conductance.

15. (Twice Amended) The method of Claim 1 wherein the deposition process gas is a first deposition process gas, and further comprising the acts of [said varying a flux is part of a deposition sequence for depositing a thin film onto the substrate in the process chamber, the deposition sequence comprising]:

using the first deposition process gas to form a monolayer on a surface of the substrate;

removing the first deposition process gas from the chamber;

introducing a second atomic layer deposition process gas to the process chamber;

generating ions from the second deposition process gas by igniting a plasma;

using the ions to promote a reaction between the second deposition process gas and the monolayer; and

removing the second deposition process gas;

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wherein varying the conductance comprises increasing the conductance during the removing of the first deposition process gas, decreasing the conductance during the introduction of the second deposition process gas, and increasing the conductance during the removing of the second deposition process gas

[introducing a first reactant gas into the chamber;

forming at least one monolayer on the substrate by adsorption of the first reactant gas;

increasing the conductance out of the process region;

decreasing the conductance out of the process region;

introducing at least one ion generating feed gas into the chamber;

generating a plasma from the ion generating feed gas to form ions;

exposing the substrate to the ions;

modulating the ions;

reacting the monolayer with the ions to deposit the thin film;

increasing the conductance out of the process region; and

decreasing the conductance out of the process region].

16. (Twice Amended) The method of Claim 1 wherein the deposition process gas is a first deposition process gas, and further comprising the acts of [said varying a flux is part of a deposition sequence for depositing a thin film onto the substrate in the process chamber, the deposition sequence comprising]:

using the first deposition process gas to form a monolayer on a surface of the substrate;

removing the first deposition process gas from the chamber;

introducing a second atomic layer deposition process gas to the process chamber;

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generating reactive atoms from the second deposition process gas by igniting a plasma;

reacting the reactive atoms with the monolayer to form a thin film; and

removing the second deposition process gas;

wherein varying the conductance comprises increasing the conductance during the removing of the deposition process gas, decreasing the conductance during the introduction of the second deposition process gas, and increasing the conductance during the removing of the second deposition process gas

[introducing a first reactant gas into the chamber;

forming at least one monolayer on the substrate by adsorption of the first reactant gas;

increasing the conductance out of the process region;

decreasing the conductance out of the process region;

introducing at least one reactive atom generating feed gas into the chamber;

generating a plasma from the reactive atom generating feed gas to form reactive atoms;

exposing the substrate to the reactive atoms;

modulating the reactive atoms;

reacting the monolayer with the reactive atoms to deposit the thin film;

increasing the conductance out of the process region; and

decreasing the conductance out of the process region].

17. (Amended) The method of Claim 1 further comprising the act of introducing [a] purge gas pulses to the process chamber [region and varying the chamber conductance].

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18. (Amended) The method of Claim 17 wherein varying the [chamber] conductance comprises [periodically] varying the conductance between a first conductance and a second conductance, the second conductance being higher than the first conductance, [relatively low and relatively high conductances,] wherein second [high] conductance periods occur at the beginning and end of each purge gas pulse and [with] a period of first [low] conductance occurs [in-] between the second conductance periods.

19. (Amended) A [In a deposition process performed in a process chamber having a process region, a] method comprising the acts of:

establishing a first flux of a first atomic layer deposition process gas over a substrate positioned in a process chamber by setting a first conductance of the chamber as the first process gas deposits a monolayer over a surface the substrate;

establishing a second flux of the first process gas over the substrate by setting a second conductance of the chamber, higher than the first conductance, as the first process gas is removed from the chamber;

establishing a first flux of a second atomic layer deposition process gas over the substrate by setting a third conductance of the chamber as the second process gas reacts with the deposited monolayer; and

establishing a second flux of the second process gas over the substrate by setting a fourth conductance of the chamber, higher than the third conductance, as the second process gas is removed from the chamber

[introducing a gas into the process region for a first duration;

increasing the conductance out of the process region for a second duration;

introducing at least one additional gas;

decreasing the conductance out of the process region for a third duration; and

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increasing the conductance out of the process region for a fourth duration.]

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